



PRESSURE SENSITIVE SCROLLBAR FEATURE

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Abstract

A proximity sensor system includes a sensor matrix array having a characteristic capacitance on horizontal and vertical conductors connected to sensor pads. The capacitance changes as a function of the proximity of an object to the sensor matrix. The change in capacitance of each node in both the X and Y directions of the matrix due to the approach of an object is converted to a set of voltages in the X and Y directions. These voltages are processed by circuitry to develop electrical signals representative of the centroid of the profile of the object, i.e., its position in the X and Y dimensions. Noise reduction and background level setting techniques inherently available in the architecture are employed. Pressure information is used to modify the scrolling speed.

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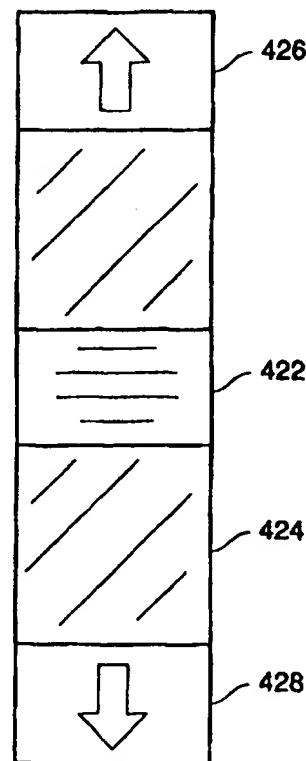
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<p>(21) International Application Number: PCT/US96/17862</p> <p>(22) International Filing Date: 6 November 1996 (06.11.96)</p> <p>(30) Priority Data: 08/558,114 13 November 1995 (13.11.95) US</p> <p>(71) Applicant: SYNAPTICS, INC. [US/US]; 2698 Orchard Parkway, San Jose, CA 95134 (US).</p> <p>(72) Inventors: GILLESPIE, David; 220 Ventura Avenue #8, Palo Alto, CA 94306 (US). ALLEN, Timothy, P.; 16100 Soda Springs Road, Los Gatos, CA 95030 (US). FERRUCCI, Aaron, T.; 2004 Ocean Street Ext., Santa Cruz, CA 95060 (US).</p> <p>(74) Agents: D'ALESSANDRO, Kenneth et al.; D'Alessandro & Ritchie, P.O. Box 640640, San Jose, CA 95164-0640 (US).</p>	<p>(81) Designated States: CN, JP, KR, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>	

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(57) Abstract

A proximity sensor system includes a sensor matrix array having a characteristic capacitance on horizontal and vertical conductors connected to sensor pads. The capacitance changes as a function of the proximity of an object to the sensor matrix. The change in capacitance of each node in both the X and Y directions of the matrix due to the approach of an object is converted to a set of voltages in the X and Y directions. These voltages are processed by circuitry to develop electrical signals representative of the centroid of the profile of the object, i.e., its position in the X and Y dimensions. Noise reduction and background level setting techniques inherently available in the architecture are employed. Pressure information is used to modify the scrolling speed.

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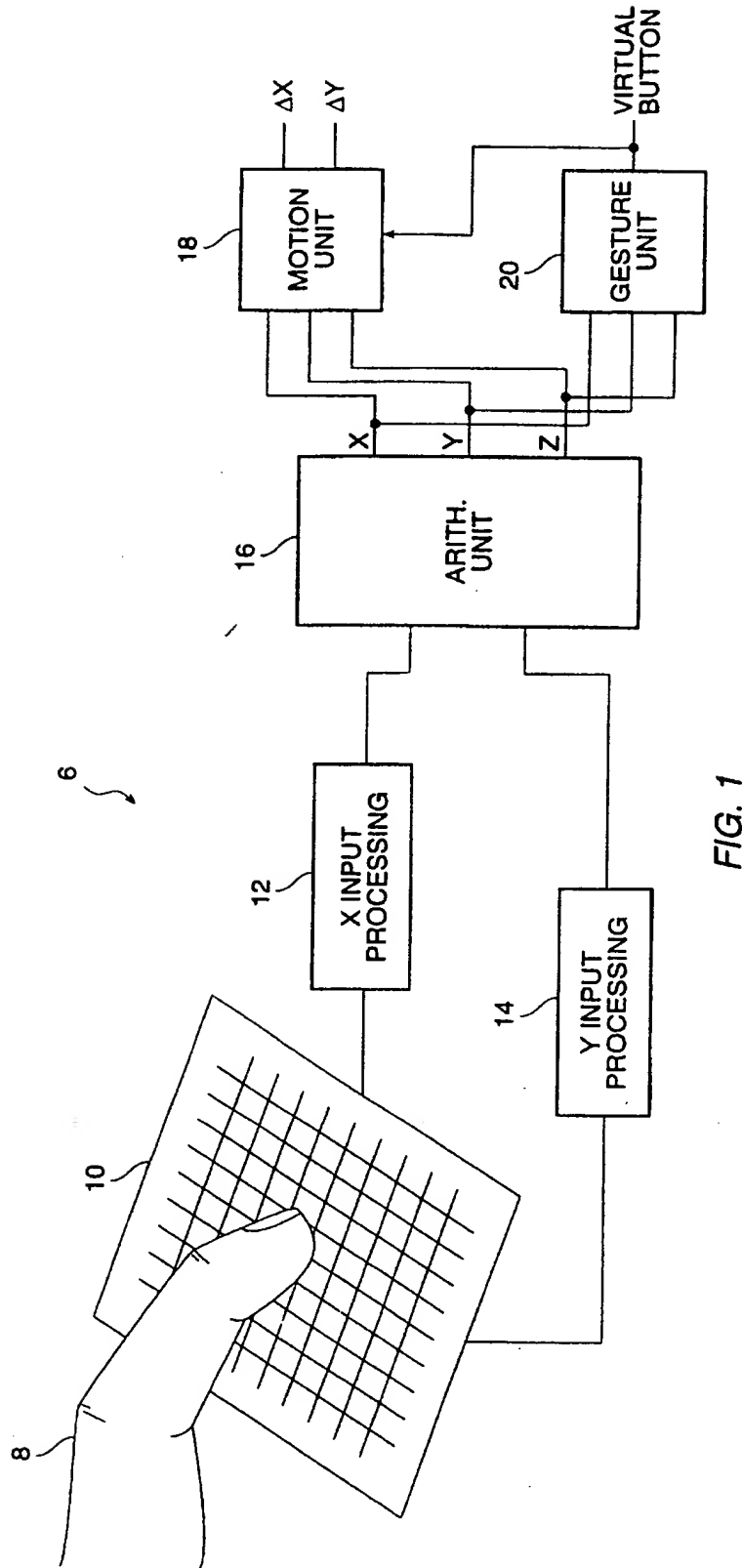


FIG. 1

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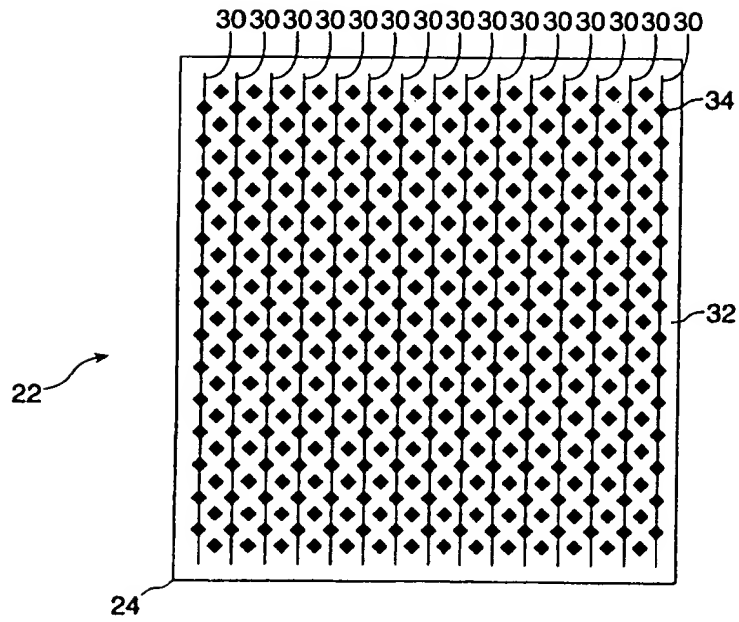


FIG. 2A

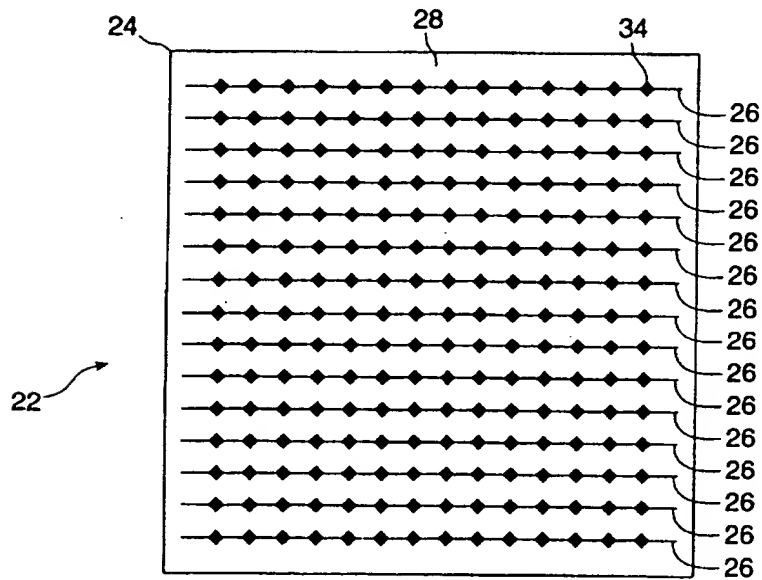


FIG. 2B

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